

CLAIMS

1. A vibration detecting apparatus including a first amplifying means for amplifying a vibration transmitted to a rigid body and a vibration detecting sensor for detecting the amplified vibration.

2. The vibration detecting apparatus according to Claim 1, wherein the vibration detecting sensor is arranged to a case comprising an upper lid and a base plate and the upper lid comprises a rigid body.

3. The vibration detecting apparatus according to Claim 1 or 2, wherein the first amplifying means is constructed by a constitution including pressing means having an elasticity for pressing the vibration detecting sensor.

4. The vibration detecting apparatus according to any one of Claims 1 through 3, wherein the first amplifying means is constructed by a constitution including the pressing means for pressing the vibration detecting sensor by a face thereof opposed to the vibration detecting sensor by a shape different from a shape of the vibration detecting sensor.

5. The vibration detecting apparatus according to any one of Claims 1 through 4, wherein the vibration detecting sensor is constituted by a piezoelectric sensor having a flexibility.

6. The vibration detecting apparatus according to Claim 1, wherein the vibration detecting sensor is constituted by a constitution of being supported by a vicinity of a fixing portion for fixing the rigid body.

7. The vibration detecting apparatus according to Claim 6, wherein the vibration detecting sensor is constructed by a constitution of being arranged in a case comprising a rigid body and providing a leg portion as a fixing portion at a bottom face of the case for supporting the vibration detecting sensor at a vicinity of the leg portion.

8. The vibration detecting apparatus according to Claim 6 or 7, wherein the vibration detecting apparatus is constructed by a constitution including a plurality of the fixing portions and supporting the vibration detecting sensor at the vicinities of the plurality of fixing portions.

9. The vibration detecting apparatus according to any one of Claims 6 through 8, wherein the vibration detecting sensor is constituted on a side of a vibration source of the fixing portions.

10. The vibration detecting apparatus according to any one of Claims 6 through 9, wherein the vibration detecting sensor is constituted by a piezoelectric sensor having a flexibility.

11. The vibration detecting apparatus according to Claim 1, wherein the vibration detecting sensor is constituted by a piezoelectric sensor having a flexibility, further including determining means for determining biologic information after determining motion information based on an output of the piezoelectric sensor.

12. The vibration detecting apparatus according to Claim 11, wherein the vibration is derived from a body movement of the human body and the determining means is constituted to determine a heart rate, respiration or the like as the biologic information after determining presence of the human body as the motion information.

13. The vibration detecting apparatus according to Claim 11 or 12, wherein the determining means is constructed by a constitution including first determining means for determining the motion information and second determining means for determining the biologic information.

14. The vibration detecting apparatus according to Claim 13, further including power supplying means for supplying a power to the first determining means and the second determining means and the power supplying means is constructed by a

constitution which does not supply at least a portion of the power to the second determining means in determining the motion information, or does not supply at least a portion of the power to the first determining means in determining the biologic information.

15. The vibration detecting apparatus according to any one of Claims 11 through 14, wherein the determining means is constructed by a constitution including second amplifying means for amplifying an output of the piezoelectric sensor, an amplification factor in determining the biologic information being larger than an amplification factor in determining the motion information.

16. A toilet seat apparatus characterized in a toilet seat apparatus arranged with the vibration detecting sensor of the vibration detecting apparatus according to any one of Claims 1 through 10, at the case comprising the upper lid and the base plate;
wherein the vibration detecting sensor is a piezoelectric sensor in a code-like shape.

17. A toilet seat apparatus characterized in a toilet seat apparatus arranged with the vibration detecting sensor of the vibration detecting apparatus according to any one of Claims 11 through 15 at the case comprising the upper lid and the base plate;
wherein the vibration detecting sensor is a piezoelectric sensor in a cord-like shape.

18. The toilet seat apparatus according to Claim 17 constituted to include controlling means for controlling at least one of displaying means, informing means, communicating means, cleansing means, drying means, toilet seat heating means, water feeding and discharging means, room air conditioning means, ventilating means, deodorizing means and the like based on the motion information and the biologic information.

19. The toilet seat apparatus according to any one of Claims 16 through 18, wherein the piezoelectric sensor in the code-like shape outputs an electric signal in

accordance with an acceleration of a vibration when the piezoelectric sensor is applied with the vibration.

20. The toilet seat apparatus according to any one of Claims 16 through 19, wherein the piezoelectric sensor in the cord-like shape is attached to one of the upper lid and the base plate and the case includes the pressing means for generating an output by being brought into contact with the piezoelectric sensor in the cord-like shape when the toilet seat apparatus is seated.

21. The toilet seat apparatus according to Claim 20, wherein the pressing means is a projection projected from an inner face of the case to the piezoelectric sensor in the cord-like face arranged in the case.

22. The toilet seat apparatus according to Claim 21, wherein the projection is constituted by a pad for absorbing an impact attached to a lower face of the base plate and brought into elastic contact with an upper face of a toilet main body and the pad is provided to be able to be brought into contact with the piezoelectric sensor in the cord-like shape by penetrating a through hole of the base plate.

23. The toilet seat apparatus according to Claim 21, wherein the piezoelectric sensor in the cord-like shape is supported in a state of being separated from the inner face of the case and the projections are arranged alternately to the upper lid and the base plate along a cable longitudinal direction.

24. The toilet seat apparatus according to Claim 20, wherein an outer face of the upper lid is recessed with a peripheral groove, the pressing means is formed by an elastic body fitted into the peripheral groove and the piezoelectric sensor in the cord-like shape is arranged to be contained in the elastic body.

25. The toilet seat apparatus according to any one of Claims 19 through 24, wherein the electric signal is used for controlling a temperature of hot water of cleaning means, a water pressure, a temperature of a heater in a toilet seat, or detecting a heart

rate or the like.

26. The toilet seat apparatus according to Claim 25, wherein the electric signal is used by being outputted to an outside monitor via communicating means.